# CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory
An ISO 9001:2008 Certified Company
**NABL** - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No: CTCE/BBMP/KRIDL/W.No.13/BC/Bitumen/2017-18 11.01.2018

## TEST REPORT ON BITUMEN CONTENT AFTER GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

| | | |
|---|---|---|
| * Customer | : | **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore. |
| * Agency | : | **Technical Manager (West),** KRIDL, Bangalore. |
| * Name of Work | : | Improvements to Roads and Asphalting at Shooting Bungalow road Ravindra Nagara and other roads in Mallasandra Ward No.13, BBMP, Bangalore. |
| * Reference | : | BBMP/EE/DD/WO/142/2017-18 Dated: 21.12.2017 |
| * Sample ID | : | Shooting Bunglow road in Mallasandra in at ward no.13, |
| Technical Reference | : | IS 2386 and IRC:SP:11-1984 |
| Date of Testing | : | 11.01.2018 |

**GRADATION AFTER EXTRACTION**

| Sieve Size in mm | Trail 1 | | | | Specified Limits as per MORTH specification table 500-18 (Grading-2) |
|---|---|---|---|---|---|
| | Weight Retained, gm | % Retained | %Cummulative Retained | % Passing | |
| 19 | 0 | 0 | 0 | 100 | 100 |
| 13.2 | 42.52 | 9.02 | 9.02 | 90.98 | 79-100 |
| 9.5 | 30.14 | 6.39 | 15.41 | 84.59 | 70-88 |
| 4.75 | 76.23 | 16.17 | 31.58 | 68.42 | 53-71 |
| 2.36 | 60.28 | 12.78 | 44.36 | 55.64 | 42-58 |
| 1.18 | 54.28 | 11.51 | 55.87 | 44.13 | 34-48 |
| 0.6 | 50.38 | 10.69 | 66.56 | 33.44 | 26-38 |
| 0.3 | 53.64 | 11.38 | 77.94 | 22.06 | 18-28 |
| 0.15 | 40.24 | 8.53 | 86.47 | 13.53 | 12-20 |
| 0.075 | 30.1 | 6.38 | 92.85 | 7.15 | 4-10 |

| Sieve Size in mm | Trail 2 | | | | Specified Limits as per MORTH specification table 500-18 (Grading-2) |
|---|---|---|---|---|---|
| | Weight Retained, gm | % Retained | %Cummulative Retained | % Passing | |
| 19 | 0 | 0 | 0 | 100 | 100 |
| 13.2 | 38.41 | 8.13 | 8.13 | 91.87 | 79-100 |
| 9.5 | 40.58 | 8.59 | 16.72 | 83.28 | 70-88 |
| 4.75 | 62.4 | 13.21 | 29.92 | 70.08 | 53-71 |
| 2.36 | 75.4 | 15.96 | 45.88 | 54.12 | 42-58 |
| 1.18 | 65.41 | 13.84 | 59.72 | 40.28 | 34-48 |
| 0.6 | 50.17 | 10.62 | 70.34 | 29.66 | 26-38 |
| 0.3 | 30.28 | 6.41 | 76.75 | 23.25 | 18-28 |
| 0.15 | 27.51 | 5.82 | 82.57 | 17.43 | 12-20 |
| 0.075 | 40.21 | 8.51 | 91.08 | 8.92 | 4-10 |

*Information is furnished by the Customer/Representative.

Note:
⇒The report shall not be reproduced, except in full, without the written approval of the laboratory.
⇒The results indicated above are based on the tests carried out on the samples received in the laboratory.
⇒Any Query regarding the report must be reported within 30 days from the date of testing.

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JAS-ANZ BSCIC ISO 9001 REGISTERED


Job No.: CTCE/BBMP/KRIDL/W.No.13/BC/Agg/2017-18 11.01.2018

## TEST REPORT ON GRADATION OF AGGREGATE

| | | |
|---|---|---|
| * Customer | : | **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore. |
| * Agency | : | **Technical Manager (West),** KRIDL, Bangalore. |
| * Name of Work | : | Improvements to Roads and Asphalting at Shooting Bungalow road Ravindra Nagara and other roads in Mallasandra Ward No.13, BBMP, Bangalore. |
| * Reference | : | BBMP/EE/DD/WO/142/2017-18 Dated: 21.12.2017 |
| * Sample ID | : | Bituminous Concrete |
| Technical Reference | : | IS : 2386( Part -1)-1963 (RA-2011) |
| * Type of Mix | : | Hot mix plant, Bangalore |
| Date of Testing | : | 11.01.2018 |

Total Weight of Sample: **5100** gm

| Sieve Size, mm | Weight Retained, gm | % Retained | Cummulative % Retained | % Passing | JOBMIX Gradation as per MORTH | Remarks |
|---|---|---|---|---|---|---|
| 19 | 0 | 0 | 0 | 100 | 100 | Gradation satisfies Bituminous concrete Grade-II specification as per `MORTH 500-18 |
| 13.2 | 755 | 14.80 | 14.80 | 85.20 | 79 - 100 | |
| 9.5 | 545 | 10.69 | 25.49 | 74.51 | 70 - 88 | |
| 4.75 | 630 | 12.35 | 37.84 | 62.16 | 53 - 71 | |
| 2.36 | 520 | 10.20 | 48.04 | 51.96 | 42 - 58 | |
| 1.18 | 515 | 10.10 | 58.14 | 41.86 | 34 - 48 | |
| 0.600 | 535 | 10.49 | 68.63 | 31.37 | 26 - 38 | |
| 0.300 | 585 | 11.47 | 80.10 | 19.90 | 18 - 28 | |
| 0.150 | 340 | 6.67 | 86.76 | 13.24 | 12 - 20 | |
| 0.075 | 310 | 6.08 | 92.84 | 7.16 | 4 - 10 | |

Total Weight of Sample: **5200** gm

| Sieve Size, mm | Weight Retained, gm | % Retained | Cummulative % Retained | % Passing | JOBMIX Gradation as per MORTH | Remarks |
|---|---|---|---|---|---|---|
| 19 | 0 | 0 | 0 | 100 | 100 | Gradation satisfies Bituminous concrete Grade-II specification as per MORTH 500-18 |
| 13.2 | 645 | 12.40 | 12.40 | 87.60 | 79 - 100 | |
| 9.5 | 550 | 10.58 | 22.98 | 77.02 | 70 - 88 | |
| 4.75 | 680 | 13.08 | 36.06 | 63.94 | 53 - 71 | |
| 2.36 | 545 | 10.48 | 46.54 | 53.46 | 42 - 58 | |
| 1.18 | 635 | 12.21 | 58.75 | 41.25 | 34 - 48 | |
| 0.600 | 480 | 9.23 | 67.98 | 32.02 | 26 - 38 | |
| 0.300 | 540 | 10.38 | 78.37 | 21.63 | 18 - 28 | |
| 0.150 | 385 | 7.40 | 85.77 | 14.23 | 12 - 20 | |
| 0.075 | 510 | 9.81 | 95.58 | 4.42 | 4 - 10 | |

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Job No.: CTCE/BBMP/KRIDL/W.No.13/BC/Stability/2017-18

11.01.2018

## TEST REPORT ON MARSHALL STABILITY OF MIX

| | | |
|---|---|---|
| * Customer | : | **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore. |
| * Agency | : | **Technical Manager (West),** KRIDL, Bangalore. |
| *Name of the Work | : | Improvements to Roads and Asphalting at Shooting Bungalow road Ravindra Nagara and other roads in Mallasandra Ward No.13, BBMP, Bangalore. |
| *Reference | : | BBMP/EE/DD/WO/142/2017-18 Dated: 21.12.2017 |
| * Source | : | Hot mix Plant, Bangalore |
| * Type of Mix | : | Bituminous Concrete |
| Date of Testing | : | 11.01.2018 |

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

| Sl. No | Description | Test Result 1 | Test Result 2 | Requirement as per MORTH (Table 500-19) |
|---|---|---|---|---|
| 1 | Marshall Stability, Kn | 9.25 | 9.30 | 9 Kn (min) |
| 2 | Marshall flow, mm | 2.40 | 3.55 | 2 – 4 |
| 3 | Percent air voids in Mineral Aggregate | 3.10 | 4.45 | 3 – 6 |
| 4 | Voids in Compacted Mix | 13.25 | 14.50 | 13 - 15 |
| 5 | Percent Voids filled with Bitumen | 66.20 | 68.65 | 65 - 75 |
| 6 | Density, g/cc | 2.25 | 2.26 | -- |

*Information is furnished by the Customer/Representative.

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